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LEARNING A CATEGORY TASK(U) NAVY PERSONNEL RESEARCH AND  
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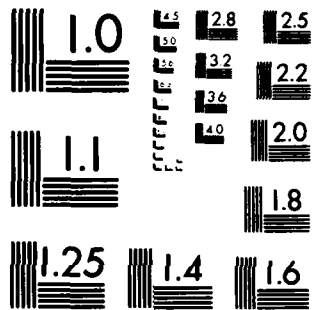
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**EFFECTS OF BEHAVIORAL OBJECTIVES AND INSTRUCTIONS ON  
LEARNING A CATEGORY TASK**

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REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER NPRDC SR 83-33	2. GOVT ACCESSION NO. AD-A130386	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) EFFECTS OF BEHAVIORAL OBJECTIVES AND INSTRUCTIONS ON LEARNING A CATEGORY TASK		5. TYPE OF REPORT & PERIOD COVERED Special Report FY82
		6. PERFORMING ORG. REPORT NUMBER 13-83-2
7. AUTHOR(s) Paula J. Konoske John A. Ellis		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS Navy Personnel Research and Development Center San Diego, California 92152		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS ZF66-512-001.007
11. CONTROLLING OFFICE NAME AND ADDRESS Navy Personnel Research and Development Center San Diego, California 92152		12. REPORT DATE May 1983
		13. NUMBER OF PAGES 13
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		15. SECURITY CLASS. (of this report) UNCLASSIFIED
		16. DISC. APPLICATION/USING SCHEDULE
17. DISTRIBUTION STATEMENT (of this Report)  Approved for public release; distribution unlimited.		
18. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
19. SUPPLEMENTARY NOTES		
20. KEY WORDS (Continue on reverse side if necessary and identify by block number)  Behavioral objectives Instructional strategies Classification learning  Learning from text Individualized instruction		
21. ABSTRACT (Continue on reverse side if necessary and identify by block number)  This study compares the effects of behavioral objectives and explicit instructions on learning a category task. Subjects were assigned to one of four groups: a read-only control group, a standard Navy behavioral objective group, a revised behavioral objective group, and an instructions group. Results of a recall test and a classification test showed a significant difference in group performance. The data indicated that giving students explicit instructions or behavioral objectives that have been revised so that they are clear to the student facilitates recall and classification performance more		

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than giving nonspecific behavioral objectives. The instructional implications are that students should be given explicit instructions or behavioral objectives that use familiar terminology and consist of specific information about the nature of the testing situation when learning from text.

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## **FOREWORD**

This effort was conducted under project ZR000-01-042-06-01.01 (Enhancement of Information Acquisition). The purpose of this project is to provide a greater understanding of the effects of instructional strategies employing instructions and objectives on student study behaviors.

This report provides recommendations for writing instructions and behavioral objectives for instructional developers in the Instructional Program Development Centers and education specialists in Navy schools.

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## **SUMMARY**

### **Problem**

The Navy currently requires that students be given behavioral objectives before they take instruction. Research has shown that performance increases significantly when specific behavioral objectives are used. An objective is specific when it is clear and salient to the student, uses terminology familiar to the student, and consists of specific information about the nature of the testing situation. Navy behavioral objectives do not always meet these criteria.

### **Objective**

The purpose of this effort was to compare student performance in learning a category task when they were given either (1) a Navy behavioral objective, (2) the same Navy objective revised to be more specific and to specify directly the test behavior required, or (3) special instructions. In the revised objective, the terminology was changed to make it more appropriate and meaningful to the learner. The instructions included information regarding the nature of the test, the type of material to be tested, and the best way to study the materials.

### **Method**

Eighty-two Navy enlisted personnel were randomly assigned to four groups: a read-only control group, a standard Navy behavioral objective group, a revised behavioral objective group, and an instructions group. The category task was a lesson on U.S. Navy radio call signs. After subjects had completed the lesson using experimental materials appropriate for their group, they took a recall test and a classification test.

### **Findings**

Results of analyses of variance computed on results of the recall and classification tests showed a significant difference among the groups on test performance. The revised behavioral objective and the instructions groups recalled and classified better than did the standard Navy behavioral objective and the read-only control groups.

### **Conclusions**

These data indicate that giving students explicit instructions or behavioral objectives that have been revised so that they are clear to the student facilitates recall and classification performance more than giving nonspecific behavioral objectives.

### **Recommendations**

Students should be given specific instructions or behavioral objectives that use familiar terminology and consist of specific information about the nature of the testing situation when learning from text.



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## INTRODUCTION

### Problem

The Navy currently requires that students be given behavioral objectives before they read instruction. Research has shown that this practice is sometimes effective while, at other times, it is not. For example, Rothkopf and Kaplan (1972) found a significant increase in performance when using specific rather than general behavioral objectives. An objective is specific when it is clear and salient to the student, uses terminology familiar to the student, and consists of specific information about the nature of the testing situation.

Behavioral objectives used in the Navy often do not meet these criteria because they are written for one of two purposes: They can focus either on the behavior of the instruction developer or on that of the student. Typically, behavioral objectives are written to provide guidance to the Navy developers regarding the instructional materials, rather than to provide the student with clues about the nature of the testing situation.

### Background

Many experiments have investigated the effects of behavioral objectives on learning. Hartley and Davies (1976) and Lewis (1981) provide good summary reviews. Some of the variables that have been studied include (1) student awareness of and interest in the stated objective, (2) clarity, difficulty, and the number of objectives, (3) whether the objectives should be inserted into texts before or after related instructional material, and (4) the frequency with which such insertions occur.

As indicated previously, Rothkopf and Kaplan (1972) found that performance increased when using specific behavioral objectives. Further, Huck and Long (1973) demonstrated a greater recall of prose when objectives are salient or explicit to the instructional task than when they are not. They concluded that the explicitness of the objectives helps the student use them as useful "advance organizers."

Duell (1974) provides some support for the notion that behavioral objectives are effective because they serve as clues to the student regarding the nature of the testing situation. She gave students detailed behavioral objectives that directed them to learn names and definitions and found that students who received the objective performed better than those who did not. Duell hypothesized that objectives focus student study behavior by setting off information needed when the learner is tested and by ensuring that the learner is aware of this relationship.

One problem with research in this area is that some studies employ objectives that are more explicit or precise than others. Dalis (1970) underlined the importance of clarity of the behavioral objectives by a study in which he noted that students provided with precisely stated, behaviorally-oriented objectives performed significantly better than did those provided with either vaguely stated instructional objectives or short paragraphs of information. Also, it is not always recognized that behavioral objectives themselves can vary considerably in clarity and that this can be a major factor in determining whether or not they enhance relevant learning.

Another factor that may facilitate relevant learning is the difficulty level of the behavioral objectives. In reviewing studies of the effects of behavioral objectives on learning, Brown (1970) pointed out that the degree of difficulty of the objectives can

influence student performance. If the objective is extremely difficult or extremely easy, it is difficult to discriminate between the performance of students who were or were not provided with the objective. It is possible that the degree of familiar terminology used in the objective could influence the difficulty of the objective and the chances that the student will use them.

### Objective

The purpose of this effort was to compare student performance in learning a category task when they were given either (1) a Navy behavioral objective, (2) that same Navy objective revised to be more specific and to specify directly the test behavior required, or (3) special instructions. In the revised objective, the terminology was changed to make it more appropriate and meaningful to the learner. The instructions included information regarding the nature of the test, the type of material to be tested, and the best way to study the materials.

## **METHOD**

### Subjects and Materials

Subjects were 82 Navy enlisted personnel who were randomly assigned to four groups--a read-only control group, a Navy behavioral objective group, a revised behavioral objective group, and an instructions group. The category task was a 972-word lesson on Navy radio call signs, which are used by radio stations to identify themselves (e.g., WABC or KCBA). The text of the lesson was a narrative description of each type of call sign. Two tests were developed: One requiring the student to recall the names and definitions of the call signs; and the second, to classify a list of 18 call signs.

The original and revised Navy behavioral objectives used in the study are presented in Figure 1.

#### The Navy Behavioral Objective:

In this lesson, the student will be given a list of address designators that includes the following types of call signs: International U.S. Navy Ship, International U.S. Navy Shore, Task Organization, Indefinite, and Voice.

The student will be able to recall the name and characteristics of each type of call sign address designator and be able to categorize each according to the type of call sign it is.

#### The Revised Behavioral Objective:

Upon completion of this lesson, the student will be able to classify any call sign according to one of the following types--International U.S. Navy Ship, International U.S. Navy Shore, Task Organization, Indefinite, Voice, or not a valid Navy call sign.

Upon completion of this lesson, the student will write from memory the names and characteristics of each of the following types of call signs: International U.S. Navy Shore, International U.S. Navy Ship Indefinite, Task Organization, and Voice.

Figure 1. The Navy objective and the revised objective used in the study.

## Procedure

Subjects were given the experimental materials in booklets and allowed to work through them at their own pace. The read-only control group was given the call signs material; the Navy behavioral objective group, the Navy objective and the call signs material; the revised behavioral objective group, the revised objective and the call signs material; and the instruction group, the same information as the revised behavioral objective group plus information regarding the best way to study material.

After completing the materials, all subjects were given the written recall test, followed by the classification test. Analyses of variance (ANOVA) were used to compare group performance on the tests.

## **RESULTS**

ANOVA results showed that the main effect for groups was significant for the recall test ( $F(3,78) = 3.52, p < .02$ ) and for the classification test ( $F(3,78) = 3.59, p < .02$ ). Means and standard deviations for each group on test performance are presented in Table 1.

Table 1  
Means and Standard Deviations for all Groups on the Tests

Group	N	Recall Test		Classification Test	
		M	SD	M	SD
Read-only control	20	4.55	2.30	7.55	4.04
Objective	19	4.52	1.67	7.78	4.10
Revised objective	20	6.45	2.99	11.65	5.02
Instructions	23	6.21	2.72	9.91	4.87

Note. The maximum scores on the recall and classification tests were 10 and 18 respectively.

Planned orthogonal comparisons of the group means of scores on the recall test revealed that the revised behavioral objective and the instructions groups differed from the read-only control and the Navy behavioral objective groups ( $t(78) = 3.71, p < .01$ ), but not from each other.

The planned orthogonal comparisons of the group means of scores on the classification test revealed the same pattern of results as did the comparisons on the recall test. The revised behavioral objective and the instruction groups did not differ from each other but they did differ significantly from the read-only control and the Navy behavioral objective groups ( $t(78) = 3.41, p < .01$ ). These data indicate that giving specific behavioral objectives or specific instructions is more effective for recall and classification performance than giving nonspecific behavioral objectives.

## **CONCLUSIONS**

Results support the hypothesis that giving students a specific behavioral objective or explicit instructions is more effective than giving a nonspecific behavioral objective on learning a category task. Information regarding the nature of the tests, the type of information to be tested, and the best way to process the information is more effective than nonspecific behavioral objectives in focusing attention and study behaviors on category material.

## **RECOMMENDATIONS**

Students should be given specific behavioral objectives or explicit instructions that utilize the terminology familiar to the student and consist of specific information about the nature of the testing situation when learning from text.

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